

CHAPTER

2

MASTERING CRITICAL
THINKING SKILLS

PSYCHOLOGICAL METHODS

Formulating Hypotheses

Psychologists use a variety of research methods to study behavior and mental processes. Psychologists begin a study by forming a research question. Then they form a hypothesis—an educated guess—that proposes a possible answer to the original research question.

Before you begin a research study, it is important to gather information about the topic to be studied. This information can help you formulate a research question and a workable hypothesis. The hypothesis should be a brief, clear statement of the expected results of the study. An important aspect of a hypothesis is that it must be able to be tested. For example, a hypothesis such as “Plants that are kept under white light grow taller than plants grown under blue light” can be tested. You can measure how much a plant has grown. However, a hypothesis such as “Plants grown under white light will be more beautiful than plants grown under blue light” cannot be tested because beauty cannot be measured.

Keep the following points in mind when formulating a hypothesis:

- ▶ Use information you have gathered from various sources—such as articles in scientific journals—about the subject to be studied to help you formulate the hypothesis.
- ▶ Be sure the hypothesis is brief, preferably no more than one sentence.
- ▶ In the hypothesis, clearly state the results that you expect from the study.
- ▶ Ensure that the hypothesis can be tested.

Use the foregoing information about formulating a hypothesis to answer the following questions.

1. Zack has to perform an experiment for his psychology class. Several of his friends have part-time jobs, and several do not. Zack thinks it might be interesting to find out if having a part-time job has any effect on the teenagers. He has read some articles about the pros and cons of teenagers having part-time jobs while going to school. After gathering information on the subject, Zack formulates the following hypothesis: Teenagers who have part-time jobs while going to school feel better about themselves than teenagers who do not have part-time jobs. Evaluate Zack's hypothesis.

► **Mastering Critical Thinking Skills (continued)**

2. Mallory notices that she studies better with background music. She has found that friends of hers also study with background music. She decides to test the effects of background music on learning as an experiment for her psychology class. Mallory proposes the following hypothesis: How does music affect learning? Evaluate Mallory's hypothesis.

3. Santina is taking part in her high school science fair. She is interested in biology and wants to do an experiment involving invertebrates. Santina has focused the experiment on the study of earthworms. She has studied their physical makeup and has decided to test factors that might affect their growth rate. She has formulated the following hypothesis: Many factors affect the growth rate of earthworms. For this experiment I will focus on the effect of caffeine. I believe that small amounts of caffeine will make earthworms grow faster. Evaluate Santina's hypothesis.

4. While reading a book for his literature class, George was startled by a sudden loud noise. He noticed that his heart began to beat faster. George's psychology class was studying the influence of biological functions on behavior. George learned that the adrenal glands release hormones that prepare the body to cope with alarming or stressful situations. These hormones increase the body's heart rate and breathing rate. George decided to do an experiment to find out how the body reacts to an unexpected startling noise. Formulate a possible hypothesis for his experiment.
